Xerox Docket No. D/98172

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Robert R. BUCKLEY et al. Group Art Unit: 2622

Application No.: 09/368,354 Examiner: J. POKRZYWA

Filed: August 5, 1999 Docket No.: 103044

For: METHODS AND SYSTEMS FOR UNDERCOLOR REDUCTION

REQUEST FOR RECONSIDERATION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In reply to the August 1, 2005 Office Action, and the personal interview conducted on August 18, 2005, reconsideration of this application is requested.

Claims 1-23 are pending in this application.

I. Personal Interview

The courtesies extended to Applicants' representative by Examiner Pokrzywa during the interview held August 18, 2005, are appreciated. The reasons presented at the interview as warranting favorable action are incorporated into the remarks below and constitute Applicants' record of the interview.

II. Claim Rejections Under 35 U.S.C. §103

Claims 1-23 are rejected under 35 U.S.C. §103(a) as unpatentable over U.S. Patent No. 5,633,662 to Allen et al. (Allen) in view of U.S. Patent No. 5,731,823 to Miller et al. (Miller). The rejection is respectfully traversed.

Neither Allen nor Miller, whether considered alone or in combination, disclose or suggest each and every feature recited in the rejected claims. For example, the combination of references fails to disclose or suggest a method of processing image data of a color image for marking, the color image containing overmarked pixels where at least one first color is to be overmarked by a second color, the method comprising: generating information that designates the overmarked pixels; performing raster image processing to create a raster image of the color image, the raster image processing including overmarking processing that allows both the at least one first color and the second color to be separately included in the overmarked pixels in the same raster image; and modifying image data of the overmarked pixels in the raster image to achieve undercolor reduction by reducing a value corresponding to a reduced amount of an underlying marking material, as recited in claim 1, or the similar features recited in the system of claim 10, or the method recited in claim 23.

Allen discloses methods for improving print quality and color density in color inkjet printing systems (col. 1, lines 6-8). The problem being addressed in Allen is that of excessive ink volumes that occurs as a result of color mixing (col. 2, lines 44-56). To address the problem, Allen proposes to limit the total volume of ink specified in image data for each pixel. The specified ink volume for each pixel is reduced by a constant scaling factor equal to the ratio of the selected maximum total ink volume per pixel to the applicable full-range of ink volume (col. 3, lines 34-43). Specifically, the ink limiting step is a linear reduction of the total amount of ink specified per pixel, in each and every pixel of data.

To achieve the linear reduction of total ink volume in each pixel data, a maximum total ink volume per pixel is determined and then linearly reduced through a specified volume in the source image data so that the total ink volume for each pixel does not exceed the maximum volume (col. 5, lines 25-33). Fig. 2 provides a graph illustrating the linear scaling of the depletion process 50 showing the total ink volume reduction in the source image data

for a given pixel (col. 6, lines 15-18). Because the exact amount of depletion necessary to optimize a printed image is difficult to predict, in a preferred embodiment, threshold and maximum total ink volumes are determined empirically, and the depletion is accomplished by linear scaling between those two points for ease and speed of calculation (col. 6, lines 54-58).

Thus, Allen fails to disclose the features as alleged in the Office Action because Allen does not disclose generating information that designates overmarked pixels. In fact, Allen is silent regarding overmarking. Rather, Allen merely calculates a total ink volume for each pixel and determines whether the total ink volume will exceed a maximum volume and subsequently linear reduces the total volume in the pixel. Merely calculating a total ink volume does not correspond to designating overmarked pixels as that term is known in the art and discussed in previous Amendments and personal interviews. In other words, mixing a predetermined amount of cyan, magenta, and yellow to produce a desired color does not correspond to "overmarking," nor does reducing a proportional total volume of those colors does correspond to "undercolor reduction."

Rather, as discussed above, Allen merely calculates a total ink volume per pixel and subsequently reduces the total volume of ink in each and every pixel that exceeds the maximum volume. Thus, there is no calculation or reduction of a value corresponding to a reduced amount of underlying marking material, as the term underlying marking material is known to those of skill in the art, described in this application, and as discussed in the previous Amendments and personal interviews. Accordingly, the applied references fail to disclose each and every feature as alleged in the Office Action.

It is also admitted in the Office Action that Allen fails to expressly disclose if the overmarked processing that allows both the at least one first color and the at least second color to be separately included in the overmarked pixels and the same raster image, and modifying the image data of the overmarked pixels and the raster image to achieve undercolor

reduction by reducing the value corresponding to a reduced amount of underlying marking material. To overcome this admitted deficiency, the Office Action combines Miller for allegedly disclosing a method of processing image data of color image containing overmarked pixels where at least one first color is to be overmarked by a second color. However, as discussed in several previous Amendments and personal interviews, Miller is silent regarding overmarking or undercolor reduction. Rather, Miller pertains to optimizing controllable parameters relating to producing printed material on a hardcopy output device (col. 1, lines 8-10). More specifically, Miller pertains to optimizing color matching between the colors displayed on a CRT monitor and a printed hardcopy of that image (see for example, col. 3, line 35 - col. 4, line 60).

Miller also discloses that rasterizing may be conducted in a variety of conventional manners known to those skilled in the art, such as choosing a resolution which yields a selected optimum balance of throughput and print quality (col. 5, lines 35-39). Miller further discloses that page statistics may be collected regarding a selected image that includes recording in which black objects touch color objects, or where text is next to or on top of colored regions (col. 6, lines 25-37). However, Miller discloses only obtaining such statistics for use in "bleed control" (col. 6, lines 38-47). For instance, if "black to color bleed control" is to be handled on an object-by-object basis, then black objects that touch color or follow color regions may have colors modified by step 92. In this case, step 92 ensures that images are printed with the correct combination of CMYK to provide a good quality black without bleeding into the "process black" of the color regions (col. 7, lines 35-45).

As Miller is silent regarding performing raster image processing and modifying image data of the overmarked pixels and the raster image to achieve undercolor reduction by reducing a value corresponding to a reduced amount of underlying marking material and Allen fails to disclose the features as alleged in the Office Action, even were Miller combined

with Allen, the resulting combination would not obtain each and every feature recited in the rejected claims.

Thus, withdrawal of the rejection of claims 1-23 under 35 U.S.C. §103(a) is respectfully requested.

III. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-23 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,

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